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AUTHOR Jackson, Janette
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ABSTRACT

An instructor's manual and student activity guide on respiration therapy technician are provided in this set of prevocational education materials which focuses on the vocational area of health occupations. (This set of materials is one of ninety-two prevocational education sets arranged around a cluster of seven vocational offerings: agriculture, home economics, distributive education, health occupations, world of work, trade and industry, and office occupations.) The instructor's guide is organized into the following elements: title of activity, duration of activity (five to nine periods), activity goals, six instructional objectives, and activity implementation (description, materials needed, safety considerations, teacher preparation prior to class, during the class, follow-up activities, and a question sheet to be duplicated). The student activity guide provides step-by-step instructions (narrative and illustrations) for completing each instructional objective (e.g., identify the parts of a nasal cannula, attach the nasal catheter to a mannequin and adjust the oxygen flow to two liters). At the end of each set of instructions is a student check point (evaluation activity). An occupational description for a respiratory therapist concludes the document. (JH)

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ED169355

HEALTH OCCUPATIONS – RESPIRATION THERAPY TECHNICIAN

Kit No. 66

INSTRUCTOR'S MANUAL

Prepared by

Janette Jackson
Pickens AVC
Easley, South Carolina 29640

State Department of Education
Office of Vocational Education
Prevocational Education
Columbia, South Carolina 29201

In Cooperation With

Vocational Education Media Center
Clemson University
Clemson, South Carolina 29631

1978

CE 020 540

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EDUCATION & WELFARE
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TITLE OF ACTIVITY

Kit No. 66, Health Occupations – Respiratory Therapy Technician

DURATION

Main Activity: 3 – 5 periods
Follow-up Activity: 2 – 4 periods

GOALS

The student will learn how to adjust a flow meter.

The student will demonstrate the procedure for using a nasal cannula.

The student will demonstrate the procedure for using a nasal catheter.

The student will demonstrate the procedure for using an oxygen mask.

The student will demonstrate the method of using a blow bottle set.

INSTRUCTIONAL OBJECTIVES

Given the necessary instructions and equipment, the student will identify the markings on the gage of the flow meter.

Given the necessary instructions, the student will adjust the thumbscrew on the flow meter so that the ball reads 2 liters O_2, 3 liters O_2, and 4 liters O_2.

Given a nasal cannula and the necessary instructions, the student will identify the parts of the nasal cannula.

Given a mannequin, the student will attach the nasal cannula to the head of a mannequin and adjust the oxygen flow to 2 liters.

Using the mannequin, the student will attach an oxygen mask to the mannequin and adjust the oxygen flow to 2 liters.

Given a blow bottle set, the student will perform a lung capacity test.

VOCATIONAL CLUSTERS

None

ACTIVITY IMPLEMENTATION

A. Activity Description

The students will work in groups of two with some of the equipment used by a respiratory therapy technician. Using the head of a mannequin, the students will practice regulating oxygen through a flow meter in conjunction with a nasal catheter, nasal cannula, and an oxygen mask. In addition, the students will perform some exercises with a blow bottle, which is used to increase lung capacity.

B. Safety

Be sure to use plastic wrap around the mouthpieces of the blow bottle. Make sure mouthpieces are dipped in Zephiran and wiped.

C. Materials

1. Audio Visual Equipment:

   None

2. Technical Equipment:

   13 oxygen masks
   13 nasal cannulas
   13 nasal catheters
   3 tanks (compressed air storage)
   13 connecting tubes
   13 flow meters with humidifier jar
   13 mannequin heads
   13 blow bottles

3. Expendable materials

   1 roll plastic wrap
   1 bottle 70% alcohol
   1 bottle Zephiran
   1 bottle blue food coloring
   1 roll masking tape
   1 roll paper towels
   water

D. Preparation Prior to Class

Fill the tanks with air at a local gas station. Do not exceed 125 PSI.

Arrange four work stations around each tank.

At each station, place the following items:

2 Student Learning Activity Guides
1 oxygen mask

1 nasal cannula
1 nasal catheter
1 flow meter with humidifier jar
1 mannequin head
1 set of blow bottles

E. During Class Session

Introduction

A respiratory therapy technician is a person who helps others improve their breathing techniques either by exercise, extra oxygen or medicine. Two years of training and clinical experience following graduation from high school is required of a respiratory therapy technician. The technician learns to clean, maintain and sterilize equipment. This person also has to learn anatomy of the body as breathing involves all body systems.

To the Instructor

Assign students to work in pairs and assist only when needed.

Before opening valves on tanks, make sure all flow meters are closed.

F. Follow-up Activities

1. Have students complete a VIEW Fact Sheet.
2. Have a respiratory therapy technician come to speak to the class.
3. Tour a respiratory therapy school.
4. Tour a department of inhalation.
5. Look in the newspaper for ads for respiratory therapy technician.
6. Have someone from the American Lung Association to speak to the class.
7. Dissect the lung of a chicken, pig or beef obtained from grocery store.
8. Have students write and present a report on different diseases that would require a respiratory therapy technician's aid.

ANSWER KEY

None

MASTERS FOR DUPLICATION

VIEW Fact Sheet

VIEW FACT SHEET

NAME _____ CLASS _____ OCCUPATION _____

A. List the advantages (good points) of this occupation (job).

B. List the disadvantages (bad points) of this occupation (job).

C. List three things you should know to do this occupation (job).
   1.
   2.
   3.

D. What type of education should you get to be prepared (do) for this occupation (job)?

E. What courses must you take to go into this occupation (job)?

F. What do you think your future in this occupation (job) will be?

G. What wage can you expect in this occupation (job)?

H. What are the working hours of this occupation (job)?

I. To learn more about this occupation (job), write to:

J. Using a scale of 1 to 5, circle the number that measures your interest in this occupation (job) as a possible career.

I don't like it. 1 2 3 4 5 I like it.

HEALTH OCCUPATIONS – RESPIRATORY THERAPY TECHNICIAN

Kit No. 66

STUDENT

LEARNING ACTIVITY GUIDE

Prepared by

Janette Jackson
Pickens AVC
Easley, South Carolina 29640

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Office of Vocational Education
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HEALTH OCCUPATIONS– RESPIRATORY THERAPY TECHNICIAN

INTRODUCTION

What is a Respiratory Therapy Technician? A Respiratory Therapy Technician is a person who has had two years of training and clinical experience in respiratory therapy after graduation from high school. Stated simply, the RTT helps a person to breathe better.

Helping another person breathe better could be as simple as teaching breathing exercises, or as complicated as giving medicine with the aid of a machine. Some RTTs even draw blood and run tests on blood to see what the oxygen (O_2) or carbon dioxide (CO_2) level is in the blood. Therefore, it is necessary to learn body anatomy as breathing involves all body systems.

Usually, a RTT learns to clean, maintain and sterilize equipment. To introduce you to some of the equipment, you will use a nasal catheter, nasal cannula and an oxygen mask on a mannequin. Also, you will use a flow meter to practice regulating oxygen flow. You will also perform an exercise using a blow bottle to improve your lung capacity.

GOALS

The student will learn how to adjust a flow meter.

The student will demonstrate the procedure for using a nasal cannula.

The student will demonstrate the procedure for using a nasal catheter.

The student will demonstrate the procedure for using an oxygen mask.

The student will demonstrate the method of using a blow bottle set.

DIRECTIONS

Begin with Objective I; perform each step exactly as called for; and complete the checkpoint before going on to the next objective.

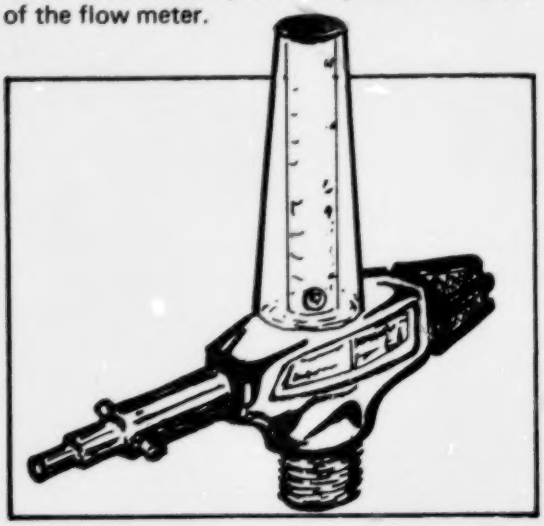
Please do not write or make any marks in this booklet.

MATERIALS

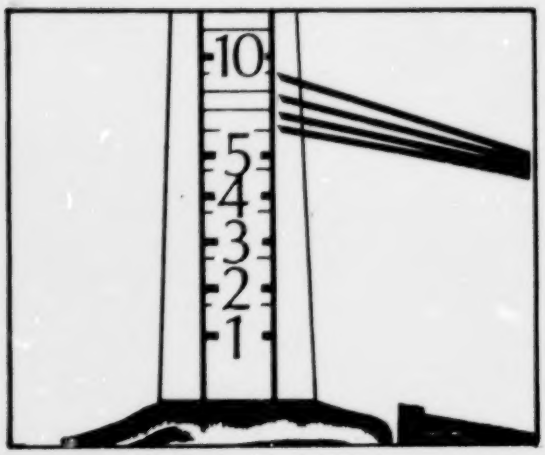
1 oxygen mask
1 nasal cannula
1 nasal catheter
1 flow meter with humidifier jar
1 mannequin head

Instructional Objective 1

Given the necessary instructions, the student will identify the margins on the gage of the flow meter.

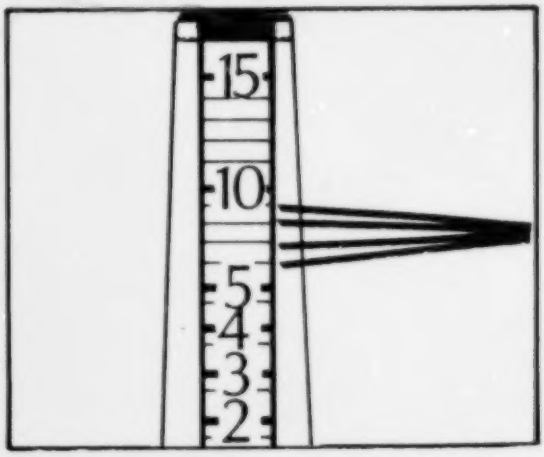


STEP 1 – Place the flow meter in front of you. The flow meter is used to control the flow of oxygen (O_2) from a tank to a patient.

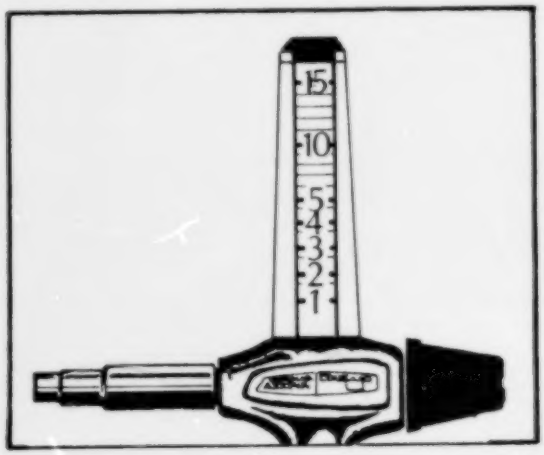


STEP 2 – Look at the numbers in the gage. You should see the numbers 1, 2, 3, 4, 5, 10 and 15. These numbers also have thick lines.

STEP 3 – Each of these numbers represents one liter of oxygen (O_2).



STEP 4 – The thin lines between 5 and 10 are for the numbers 6, 7, 8, and 9 but are not marked.



STEP 5 – The thin lines between 10 and 15 are for the numbers 11, 12, 13, and 14.

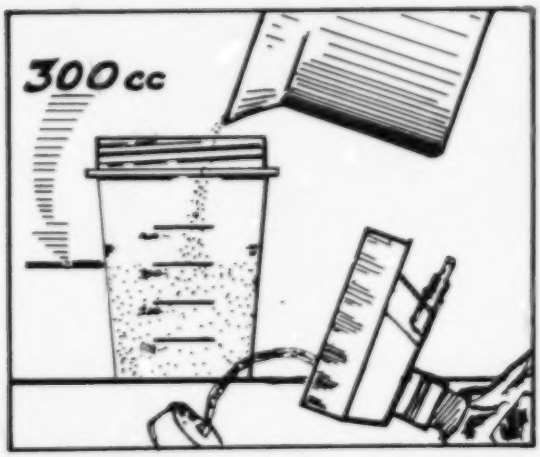
Check Point

Were you able to locate the numbers on the gage?

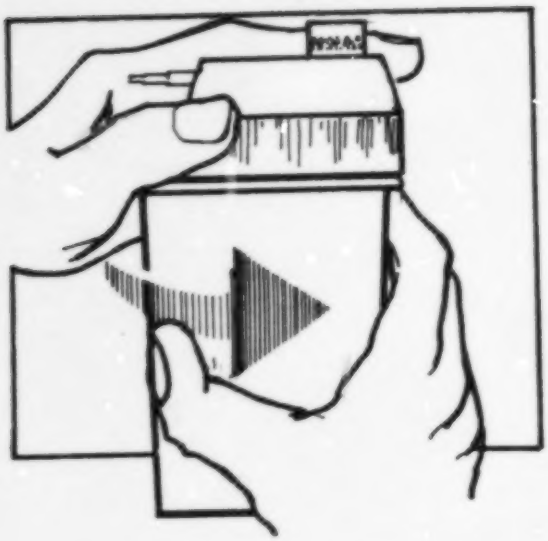
Instructional Objective 11

Given the necessary instructions, the student will adjust the thumbscrew on the flow meter so that the ball reads 2 liters O_2, 3 liters O_2 and 4 liters O_2.

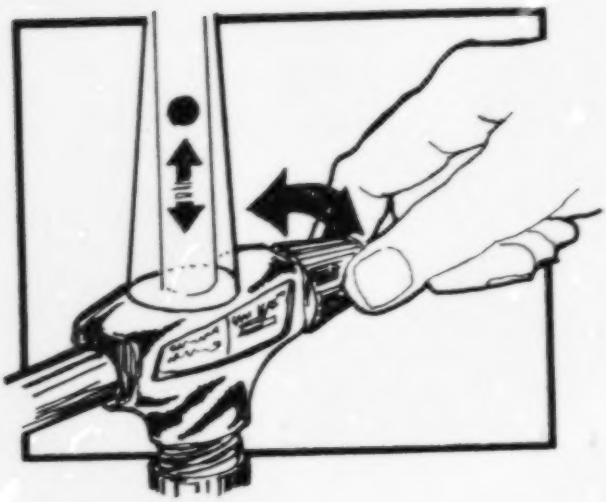
STEP 1 – Unscrew the plastic (humidifier) jar from its cap.



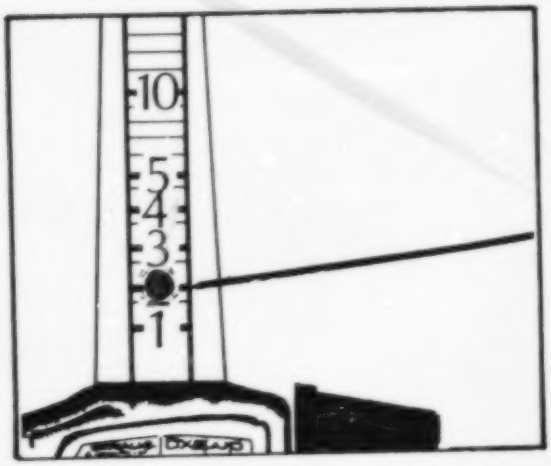
STEP 2 – Fill the jar with water to the line that is labeled 300cc.



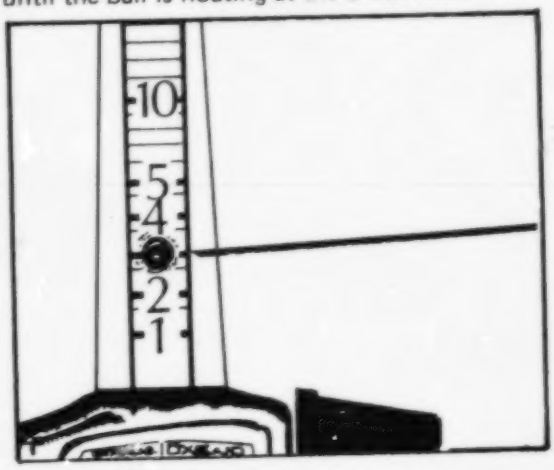
STEP 3 – Screw the humidifier jar back onto its cap.



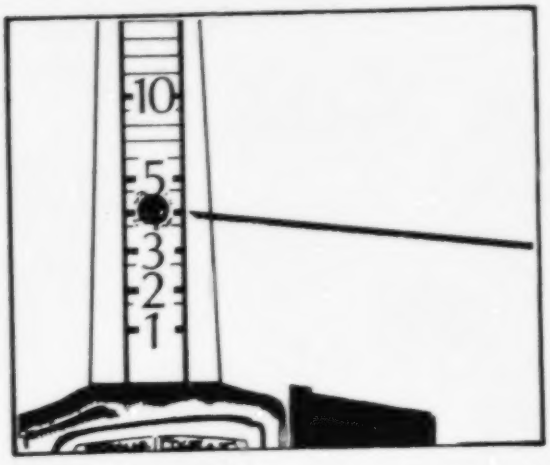
STEP 4 – Slowly turn the thumbscrew counterclockwise and watch the small ball move upward toward the top. Turn thumbscrew clockwise and watch ball move down to O.



STEP 5 – Adjust the flow meter to 2 liters by turning the thumbscrew counterclockwise until the ball is floating at the 2 liter line.



STEP 6 – Now, adjust the flow meter to 3 liters of oxygen.



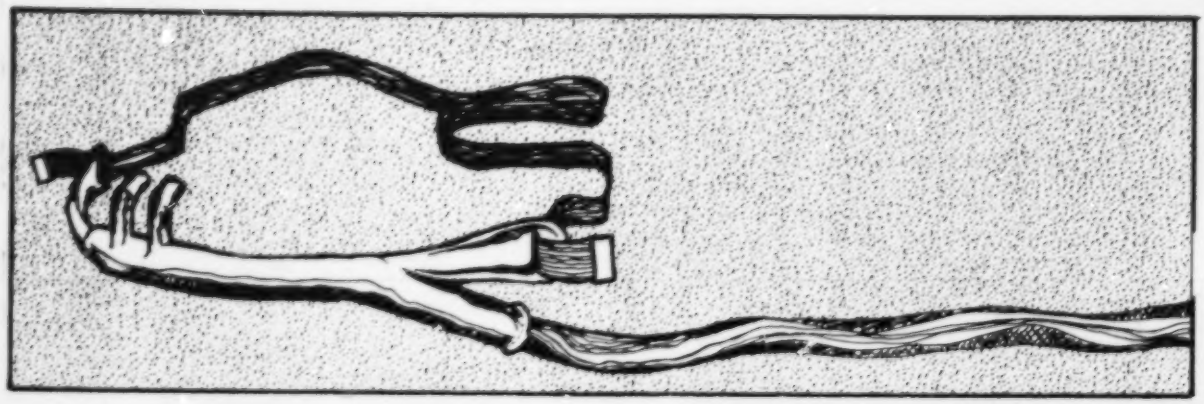
STEP 7 – Finally, adjust the flow meter to 4 liters of oxygen.

Check Point

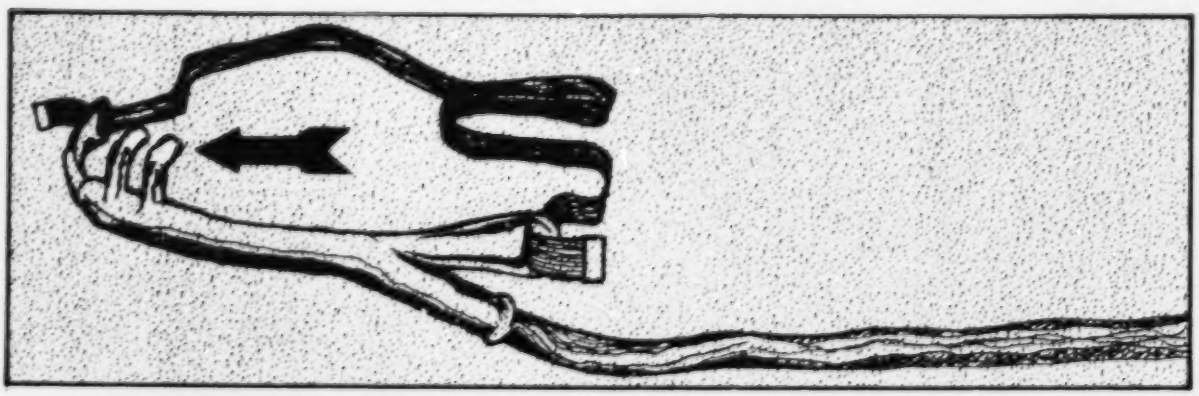
Were you able to adjust the flow meter by turning the thumbscrew?

Instructional Objective

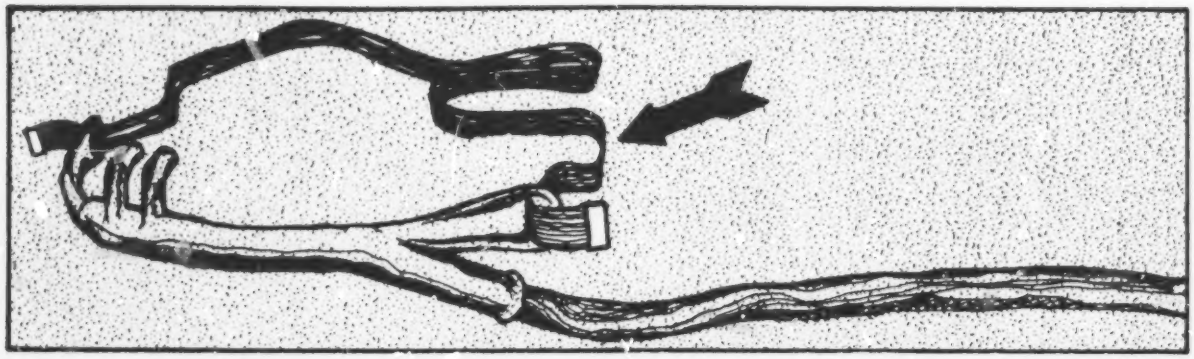
Given the necessary instructions and materials, the student will identify the parts of a nasal cannula.



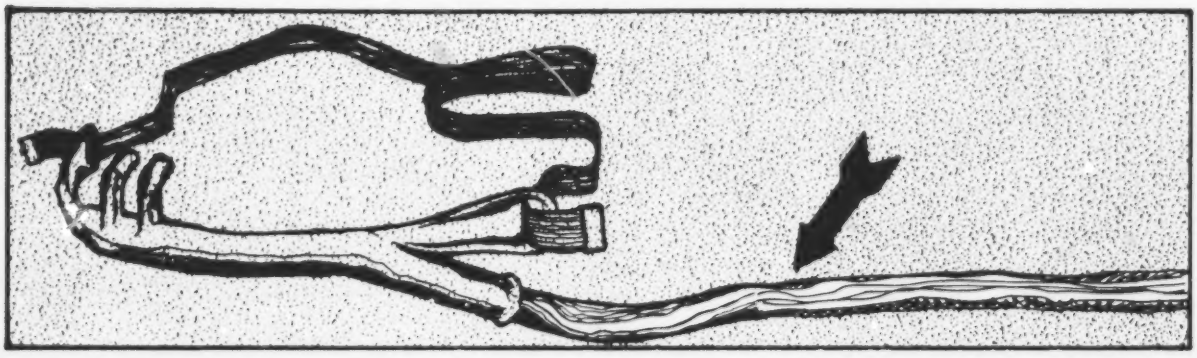
STEP 1 – Place the nasal cannula in front of you as in the illustration.



STEP 2 – These are the two primers that are inserted into the nose.



STEP 3 – This is the strap that is used to adjust the nasal cannula around the head.



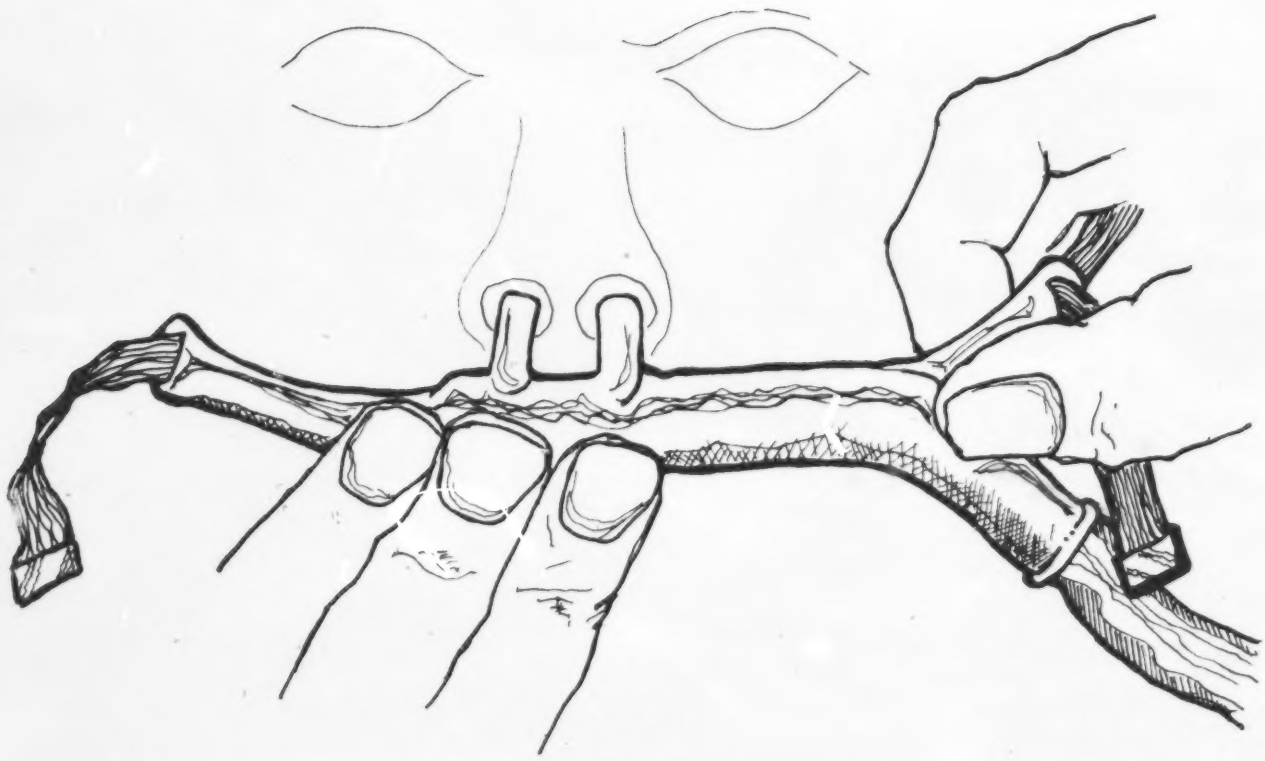
STEP 4 – This is the connecting tube that goes to the humidifier jar.

Check Point

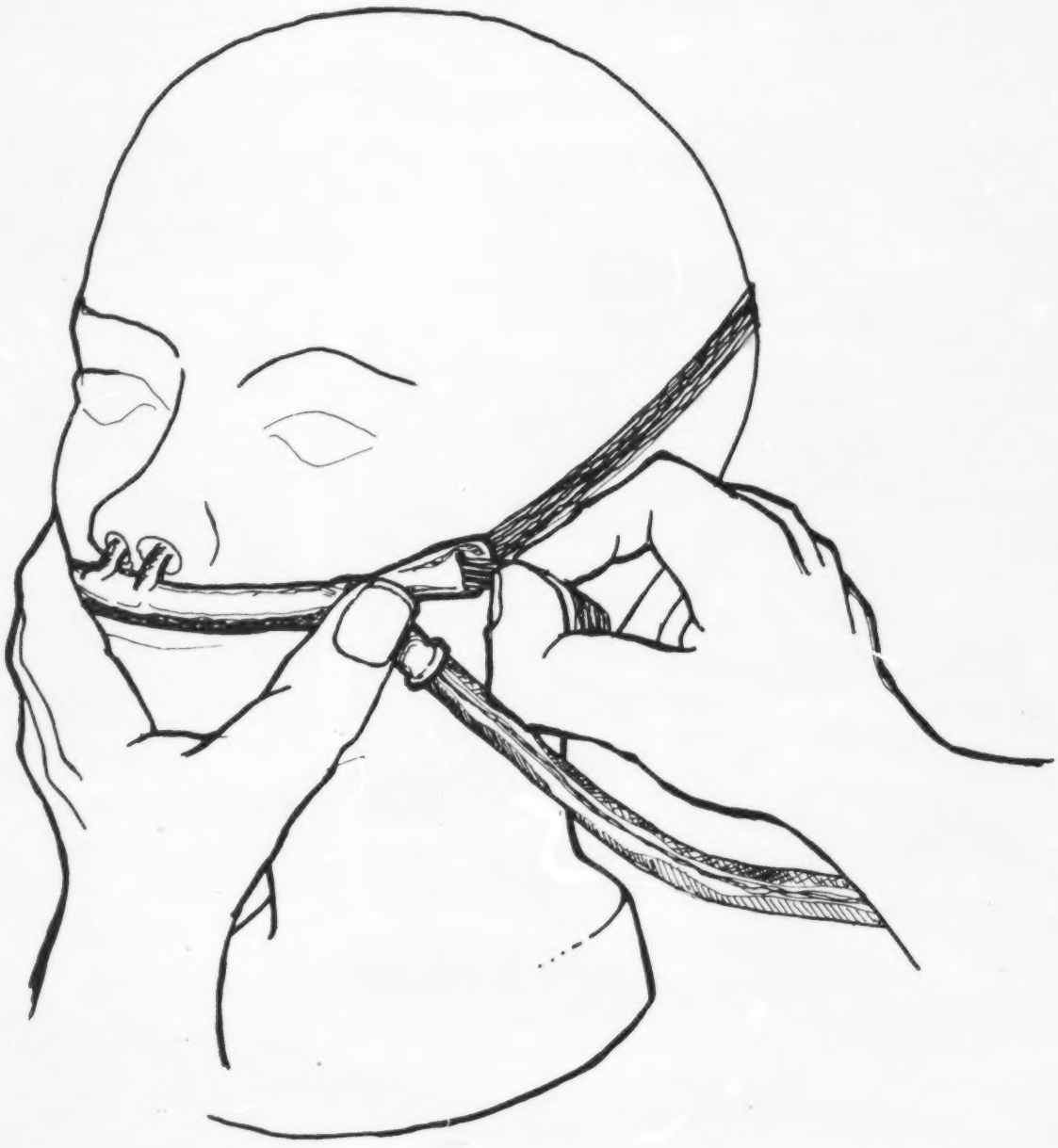
Were you able to find all of the parts of the nasal cannula.

Instructional Objective IV

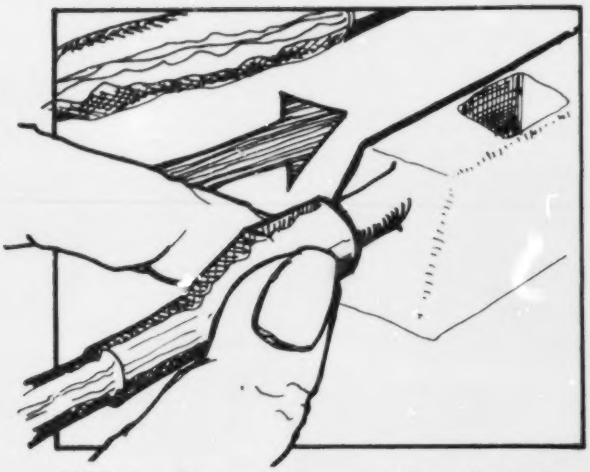
Given a mannequin, the student will attach the nasal cannula to the head of a mannequin and adjust the oxygen flow to 2 liters.



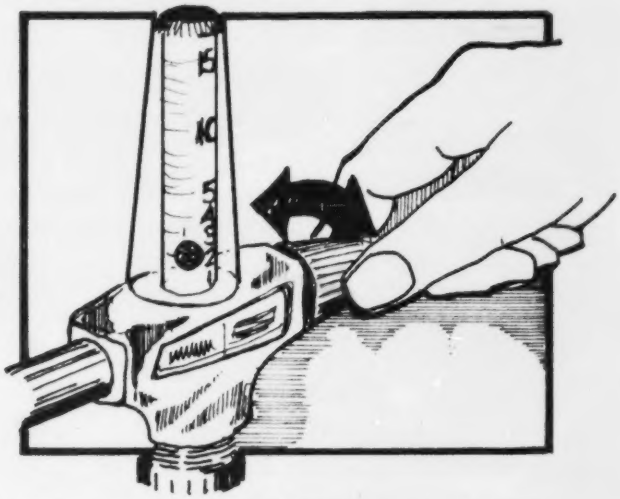
STEP 1 – Place the two primers in the nose of the mannequin.



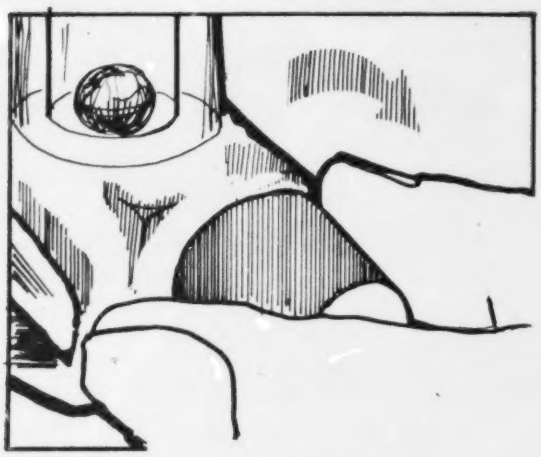
STEP 2 – Place the strap on the back of the head and adjust the strap by pulling on the loose ends of the strap. Do not pull too tight.



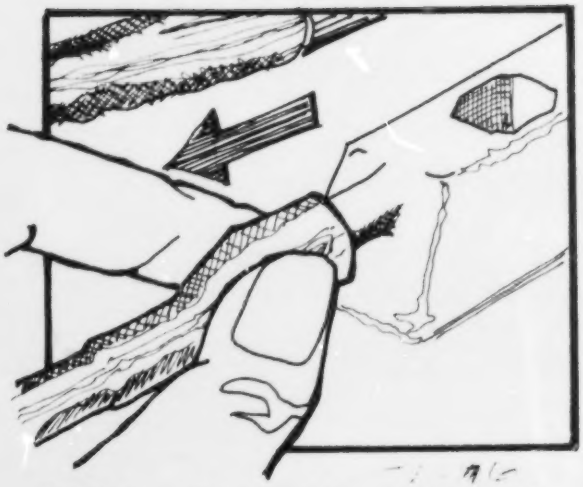
STEP 3 – Connect the connecting tube to the outlet on the top of the humidifier jar.



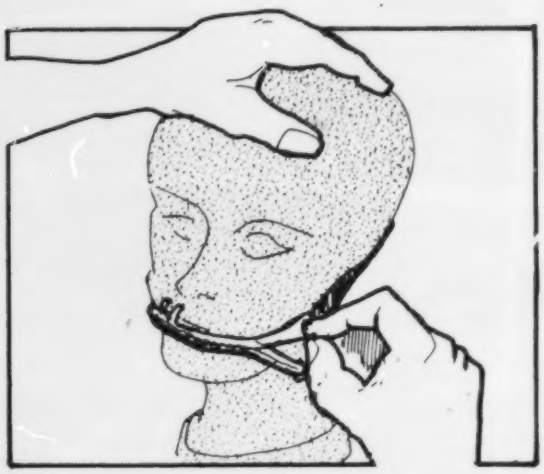
STEP 4 – Adjust the flow meter to 2 liters and allow to run for about 30 seconds.



STEP 5 – Turn off the flow meter.



STEP 6 – Disconnect the connecting tube from the humidifier jar.



STEP 7 – Remove the nasal cannula from the mannequin head.

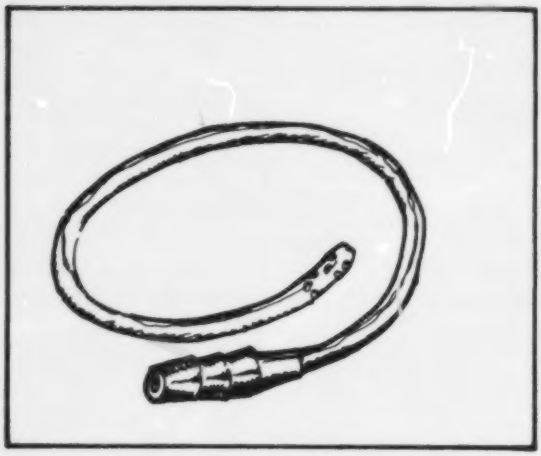
Check Point

Did you adjust the nasal cannula properly?

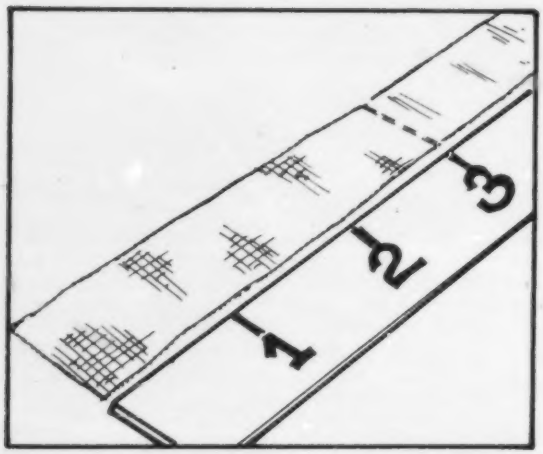
Did you adjust the flow meter to 2 liters?

Instructional Objective V

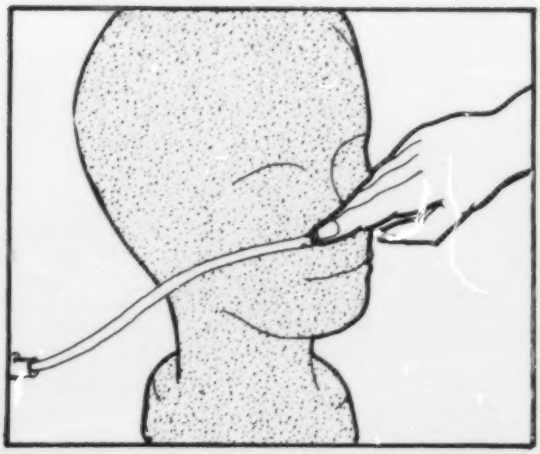
Using the mannequin, the student will attach the nasal catheter to the mannequin and adjust the oxygen flow to 2 liters.



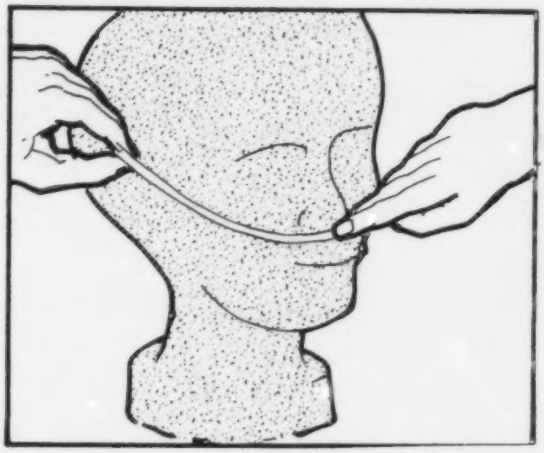
STEP 1 – Find the nasal catheter at your work area.



STEP 2 – Go to your instructor and get a piece of tape about 3 inches (7.62 cm) long.

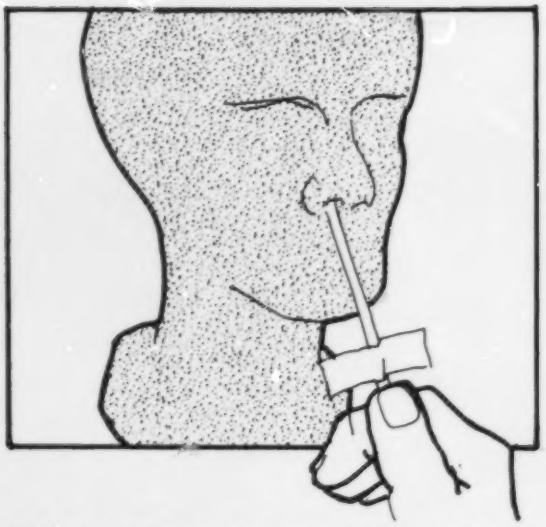


STEP 3 – Take the end of the nasal catheter that has the holes in it and place it by the tip of the mannequin's nose.

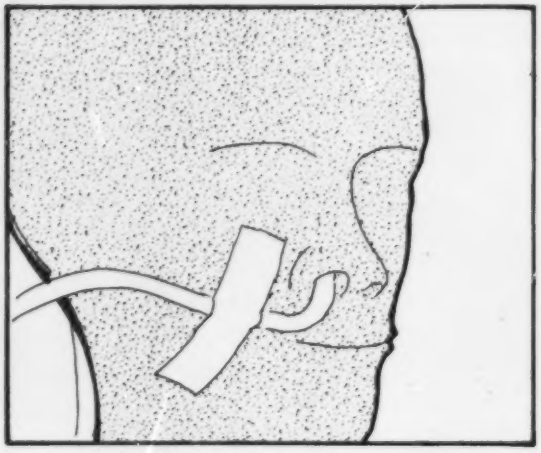


STEP 4 – Hold the tip of the nasal catheter on the nose and run the tube along the side of the face up to where the ear would be.

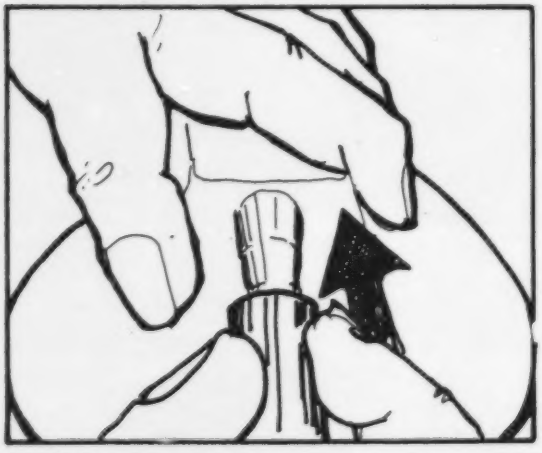
STEP 5 – Mark the place on the tube where the ear would be with a piece of tape.



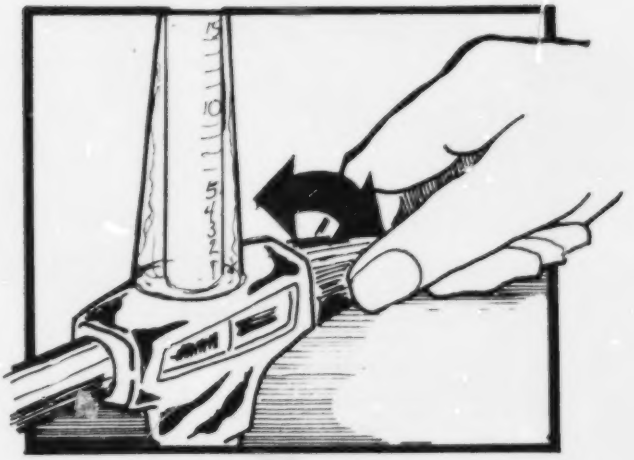
STEP 6 – Insert the nasal catheter into the nose up to where you marked it with the tape.



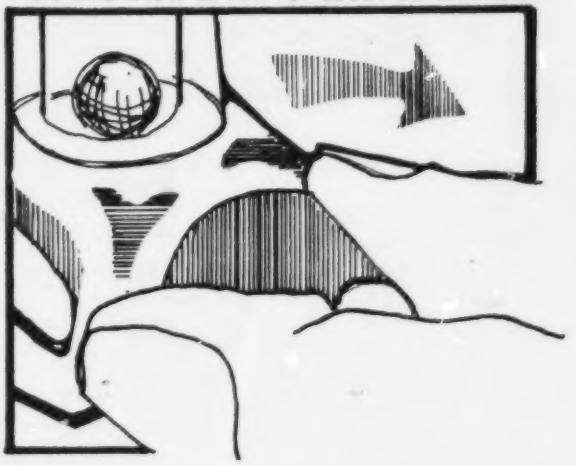
STEP 7 – Take the piece of tape and tape the nasal catheter to the cheek of the mannequin.



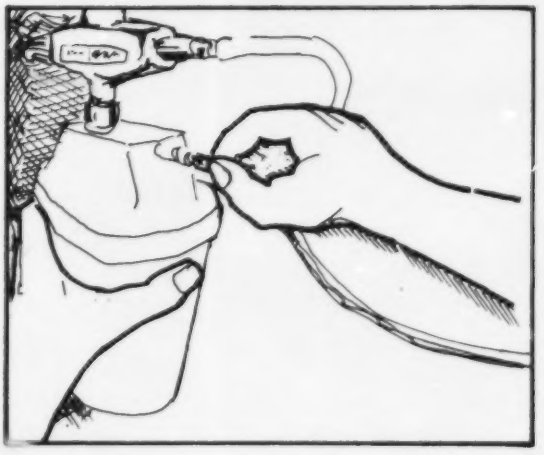
STEP 8 – Connect the connecting tube to the humidifier jar.



STEP 9 – Adjust the flow of oxygen to 2 liters and allow to run for about 30 seconds.



STEP 10 – Turn off the flow meter.



STEP 11 – Disconnect the connecting tube from the humidifier jar.

STEP 12 – Remove the tape and nasal catheter from the mannequin.

Check Point

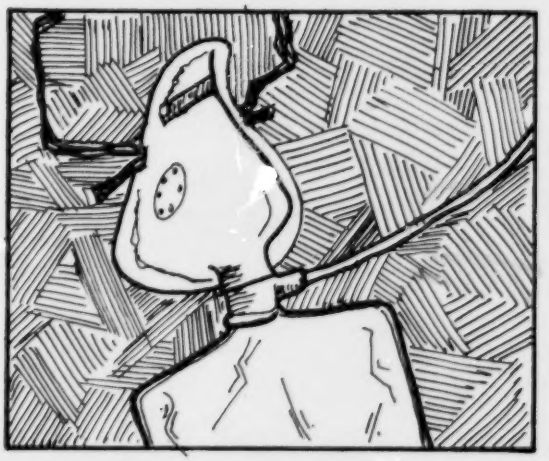
Did you measure the nasal catheter properly?

Did you tape the tube to the side of the face?

Were you able to adjust the oxygen flow to 2 liters?

Instructional Objective VI

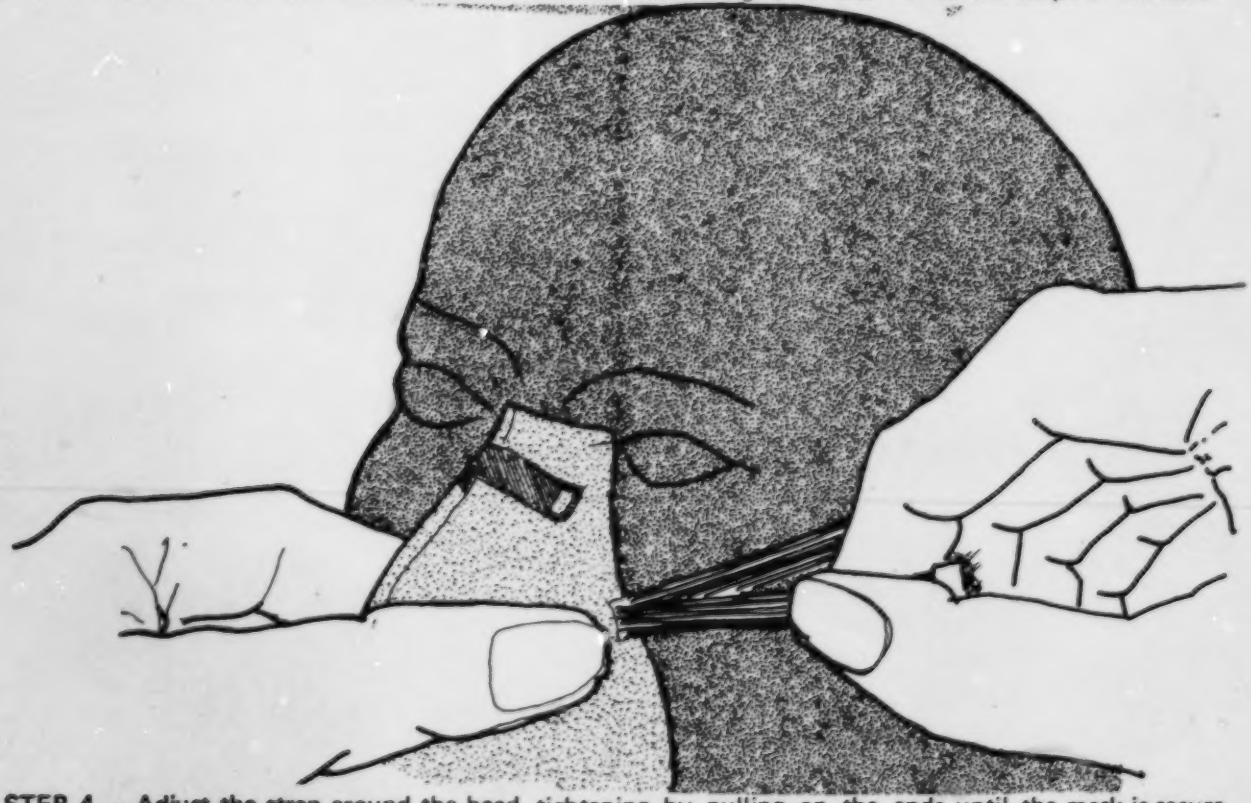
Using the mannequin, the student will attach an oxygen mask to the mannequin and adjust the oxygen flow to 2 liters.



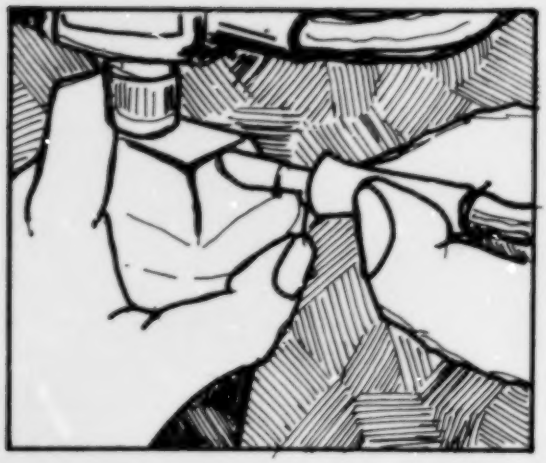
STEP 1 – Find the oxygen mask at your work area.

STEP 2 – Place the mask over the mouth and nose of the mannequin. The end with the small metal band goes over the nose.

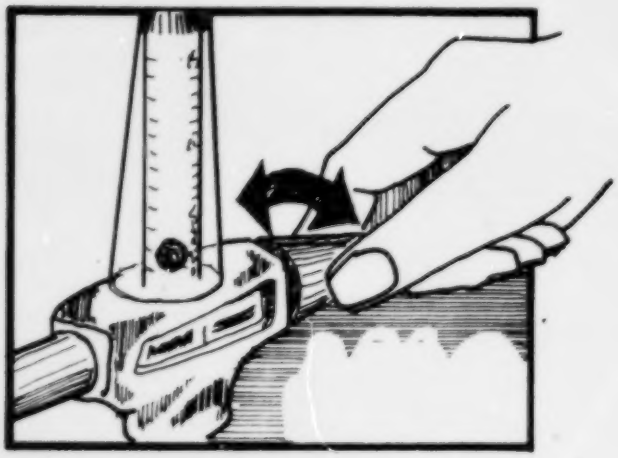
STEP 3 – Press the metal band, using your thumb and index finger, so that it fits the shape of the nose.



STEP 4 – Adjust the strap around the head, tightening by pulling on the ends until the mask is secure.

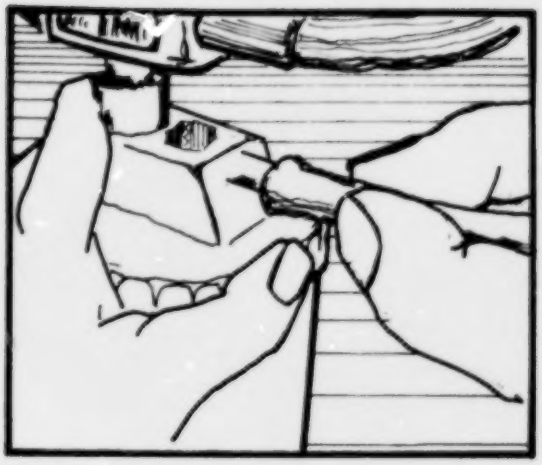


STEP 5 – Connect the connecting tube to the humidifier jar.

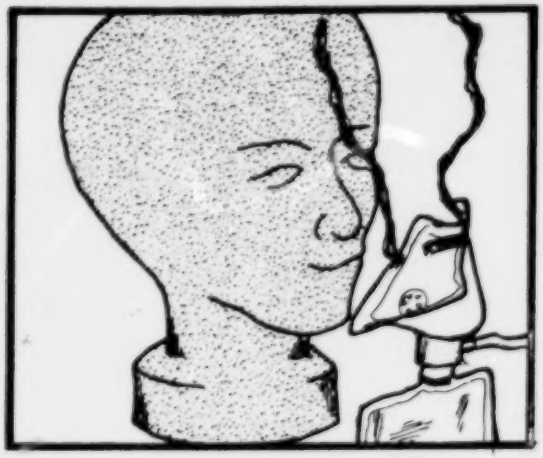


STEP 6 – Adjust the oxygen flow to 2 liters and allow to run for about 30 seconds.

STEP 7 – Turn off the flow meter.



STEP 8 – Disconnect the connecting tube from the humidifier jar.



STEP 9 – Remove the mask from the mannequin.

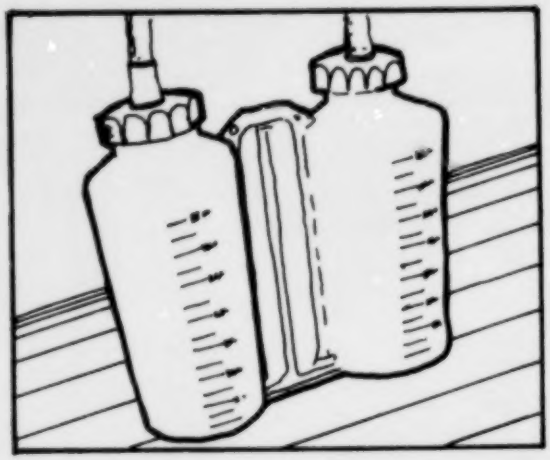
Check Point

Did you place the oxygen mask properly on the mannequin?

Did you adjust the oxygen flow to 2 liters?

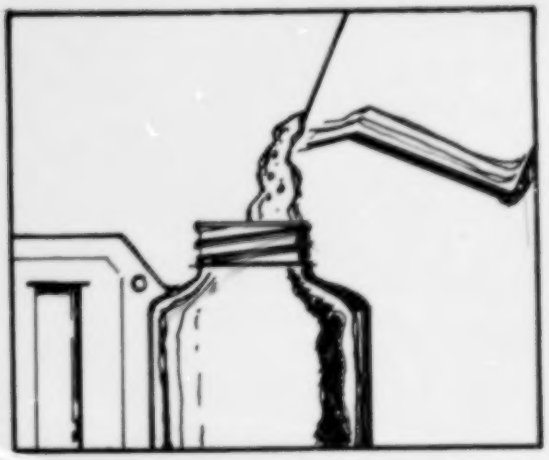
Instructional Objective VII

Given a blow bottle set, the student will perform a lung capacity test.

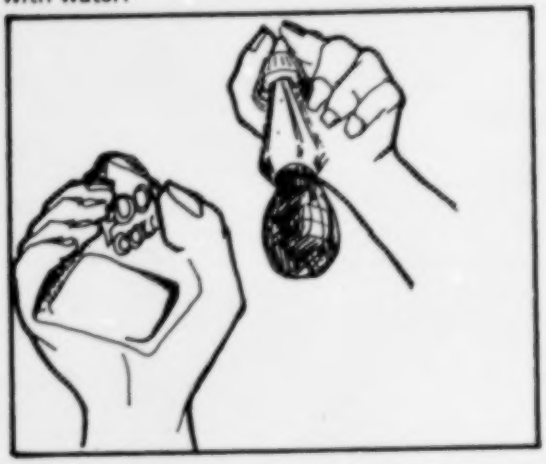


STEP 1 – Find the blow bottle set at your work area.

STEP 2 – Remove the cap from one of the blow bottles.

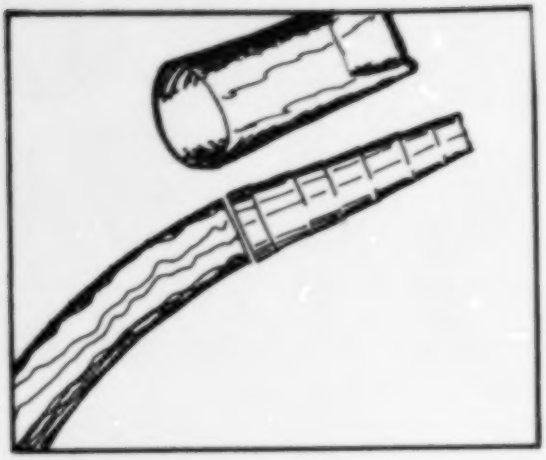


STEP 3 – Fill the bottle to the 900 cc mark with water.

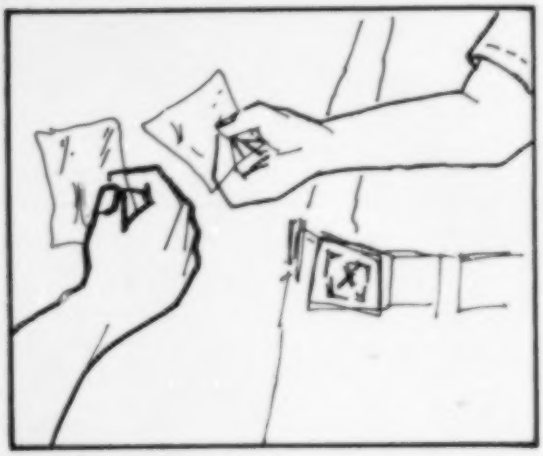


STEP 4 – Add a little food coloring to the water so you can see it in the bottle.

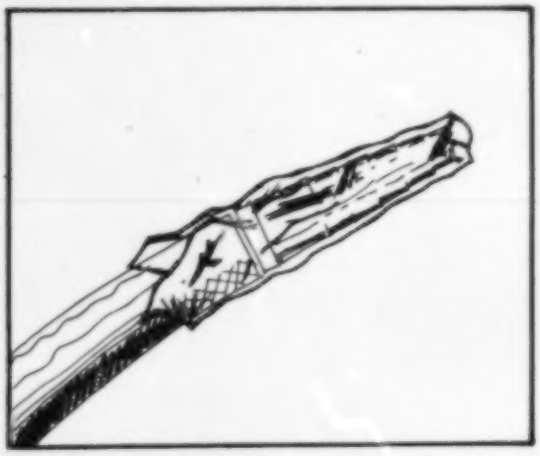
STEP 5 – Replace the cap on the blow bottle.



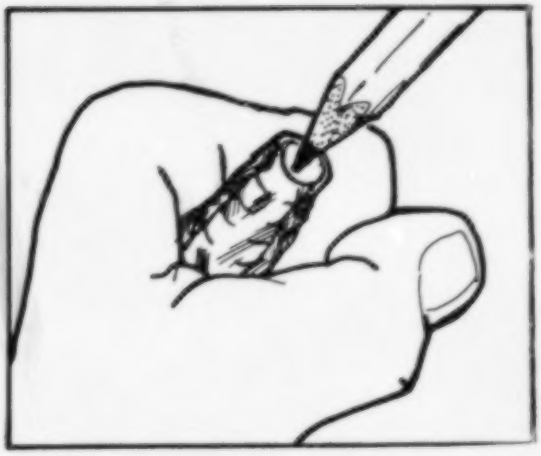
STEP 6 – Remove mouthpiece covers from ends of tubes.



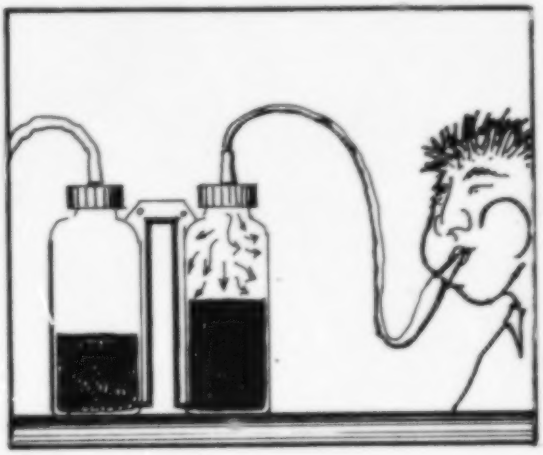
STEP 7 – Obtain two pieces of plastic wrap from your instructor, about 3 inches (7.62 cm) square.



STEP 8 – Place one piece of plastic wrap on one mouthpiece and the other on the other mouthpiece.

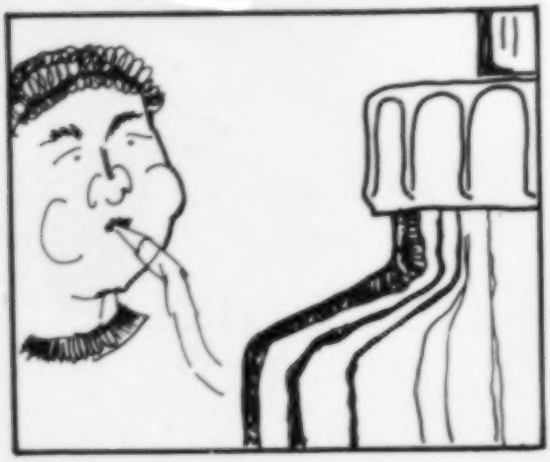


STEP 9 – Using a pencil, punch a hole in the plastic wrap.



STEP 10 – Take a deep breath, and try to blow all of the water from one bottle to the other.

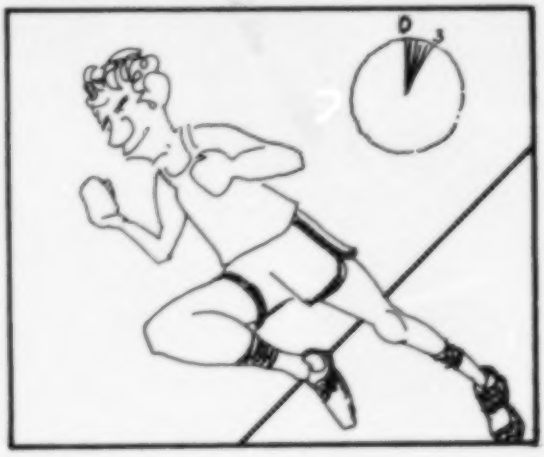
STEP 11 – If you can do this in one breath, your forced vital capacity of the lungs is good.



STEP 12 – Redo step 10 if you want to.

STEP 15 – How many cc's were you able to blow into the other bottle?

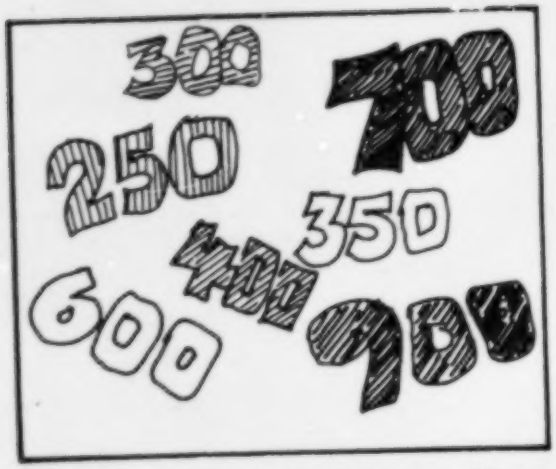
STEP 13 – Now, hold your breath as long as you can.



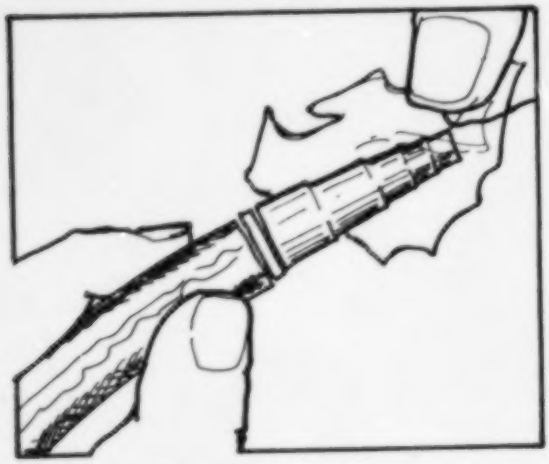
STEP 16 – Run in place for 3 minutes.

STEP 14 – Again blow into the blow bottle.

STEP 17 – Again, blow into the blow bottle.



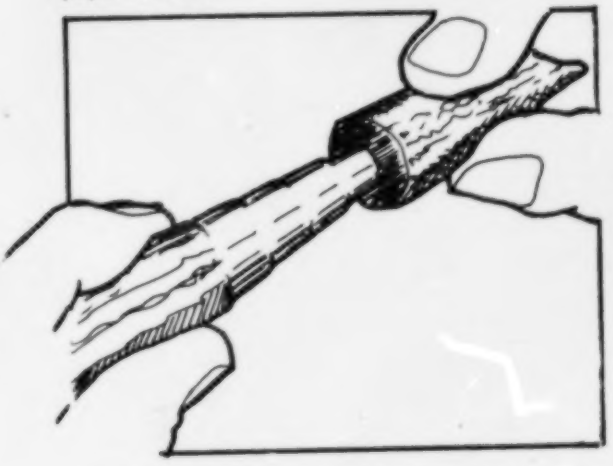
STEP 18 – How many cc's were you able to blow into the other blow bottle ?



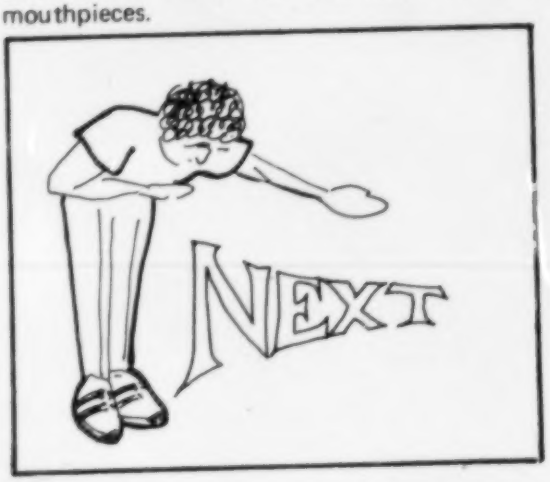
STEP 19 – Remove the plastic wrap from the mouthpieces.

STEP 20 – Dip the mouthpieces in the Zephiran solution.

STEP 21 – Wipe the mouthpieces with a paper towel.



STEP 22 – Place the caps back on the mouthpieces.



STEP 23 – Let your partner do Instructional Objective VII.

Check Point

Were you able to blow all 900 cc's of water out of one of the bottles?

OCCUPATIONAL DESCRIPTIONS

079.361-010 RESPIRATORY THERAPIST (medical ser.) inhalation therapist.

Administers respiratory therapy care and life support to patients with deficiencies and abnormalities of cardiopulmonary system, under supervision of PHYSICIAN (medical ser.) and by prescription: Sets up and operates devices, such as respirators, mechanical ventilators, therapeutic gas administration apparatus, environmental control systems, and aerosol generators. Observes equipment gages to insure specified volumes are maintained. Performs bronchopulmonary drainage and assists patient in performing breathing exercises. Monitors patient's physiological responses to therapy, as well as equipment function. Consults with PHYSICIAN (medical ser.) in event of adverse reactions. Maintains patient's chart that contains pertinent identification and therapy information. Inspects and tests respiratory therapy equipment to insure proper operating condition. Orders major repairs when needed. May demonstrate respirator care procedures to trainees and other health care personnel.